UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,585	08/25/2003	Amlan Datta	129843.1102	4088

60148 7590 05/23/2007

GARDERE / JAMES HARDIE
GARDERE WYNNE SEWELL, LLP
1601 ELM STREET
SUITE 3000
DALLAS, TX 75201

EXAMINER
DEHGHAN, QUEENIE S

ART UNIT	PAPER NUMBER
1731	

MAIL DATE	DELIVERY MODE
05/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/648,585	DATTA ET AL.	
	Examiner	Art Unit	
	Queenie Dehghan	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed March 9, 2007 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because Application Serial No. 11/031406 and Application Serial No. 11/031829 are not publications and the Glass Corning Glass Works does not list a date. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1, 2,8, 9, 11-15, 17-20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews et al. (3,838,998) in view of Matsubara et al. (2002/0004111).

2. Regarding claims 1 and 13-14, Matthews et al. disclose an agglomerate precursor comprising of aluminosilicate glasses (col. 4 line 37) from feldspar and the binding agent sodium silicate (col. 5 lines 60-63), wherein the feldspar has an alkali

metal oxide content of less than about 10% (note alkali metal oxides Na_2O and K_2O total is 8% in col. 6 lines 25-34). However, it is not clear if the agglomerate precursor has an alkali metal oxide content of less than about 10%. Matsubara et al. teach of microspheres with an alkali metal oxide content of less than 10% (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the low alkali metal oxide content of Matsubara et al. in the process of Matthews et al. in order to enhance the chemical resistance of the microspheres, as taught by Matsubara et al. Furthermore, Matthews et al. disclose the firing of the precursor to a temperature (col. 10 lines 23-24) sufficient to form a microsphere having a spherical wall (col. 10 lines 3-6, 44-46) and an average particle diameter greater than 30 microns (note the range 50 microns to 2000 microns produces an average greater than 30 microns in col. 15 lines 14-16). Furthermore, Matthews et al. disclose drying the precursor mixture (col. 7 lines 49-53) to a first moisture level (col. 8 lines 26-28). See also col. 2 lines 22-33.

3. Regarding claims 2 and 17, Matthews et al. disclose firing the precursor to a temperature between 2200-2800°F (1204-1538°C) in col. 10, line 24.

4. Regarding claim 5, Matthews et al. disclose performing the firing step in a heated vertical pipe (col. 9 lines 46-47).

5. Regarding claims 8 and 15, Matthews et al. disclose a blowing agent used in the precursor material (col. 5 lines 65-68 to col. 6 lines 1-2) that is activated during the firing step so as to release a blowing gas to expand the precursor and forming an enclosed

void in the precursor (col. 5 lines 54-57, col. 10 lines 37-45), hence forming microspheres.

6. Regarding claim 9, Matthews et al. disclose heating the precursor to glassify the precursor (col. 10 lines 3-6) to form a molten skin around the precursor (col. 10 lines 37-45).

7. Regarding claim 11, Matthews et al. disclose activating the blowing agent after the formation of the molten skin (col. 12 lines 51-56).

8. Regarding claim 12, Matthews et al. disclose trapping the blowing gas inside the molten skin (col. 5 lines 52-53).

9. Regarding claim 18, Matthews et al. disclose rapidly cooling the microspheres after the firing step (col. 11 lines 39-40).

10. Regarding claim 19, Matthew et al. disclose using blowing gas such as CO_2 and H_2O (col. 6 lines 9-11).

11. Regarding claim 20, Matthews et al. disclose drying the precursor to a moisture level of less than about 14% (note the range 5 to 15% is less than about 14% in col. 8 lines 13-14).

12. Regarding claim 23, Matthews et al. disclose a drying step to reduce moisture of the precursor (col. 7 lines 49-53) and expansion of the precursor can be attributed to the steam in the feed particle (col. 16 lines 10-11). Matthews et al. also mention that rupturing of the precursor will occur if expansion is too fast or too much (col. 12 lines 63-65). Because water is a major contributor to the expansion of the precursor, too much water would result in excess rupturing. Since Matthews et al. perform a drying step to

the precursor to reduce the moisture content, having less water in the precursor would inherently reduce the rupturing of the precursor.

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews et al. (3,838,998) in view of Matsubara et al. (2002/0004111), as applied to claim 1 above, in view of Seki et al. (JP Abstract 07024299). Matthews et al. disclose a process for manufacturing microspheres, but do not disclose using a fluidized bed reactor. Seki et al. teach producing microspheres, wherein the firing step is performed in a fluidized bed reactor (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the fluidized bed reactor of the Seki et al. in the process of Matthews et al. and Matsubara et al. in order to supply heat to the precursor.

14. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews et al. (3,838,998) in view of Matsubara et al. (2002/0004111), as applied to claim 1 above, in view of Aston et al. (4,475,936). Matthews et al. disclose a process for manufacturing microspheres, but do not disclose using a vortex furnace that is fuel fired. Aston et al. teach a vortex furnace (abstract) that is fuel-fired (col. 1 line 52) and is use to fire up glass particulates into spherical shapes (col. 1 lines 13-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the fuel-fired vortex furnace of Aston et al. in the process of Matthews et al. and Matsubara et al. to supply rapid heating of the glass particles.

15. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews et al. (3,838,998) in view of Matsubara et al. (2002/0004111), as applied to

claims 2 and 9 above, in view of Veatch et al. (2,978,340). Matthews et al. disclose a process for manufacturing microspheres, but do not disclose a firing period of 0.05 to 20 seconds and activating the blowing agent during the formation of the molten skin. Regarding claim 7, Veatch et al. teach making microspheres by firing the precursor for 2 seconds (col. 4 lines 60-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the firing period of Veatch et al. in the process of Matthews et al. and Matsubara eat al. to ensure enough time to adequate fuse and expand the particles, as taught by Veatch et al. Regarding claim 10, Veatch et al. teach of activating the blowing agent during the formation of the molten skin (col. 1 lines 33-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the activation step of Veatch et al. in the process of Matthews et al. and Matsubara et al. in order to allow for the expansion of the microsphere.

16. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews et al. (3,838,998) in view of Matsubara et al. (2002/0004111), as applied to claim 13 or 15 above, in view of Kizilshtei et al. (English translation of SU 1650196 abstract) and Yamada et al. (2001/0043996) and Brown et al. (4,235,753). Matthews et al. disclose a process for manufacturing microspheres, but do not disclose sources for the aluminosilicate, binding agent and blowing agent. Kizilshtei et al. teach of aluminosilicate microspheres made from fly ash (abstract). Yamada et al. teach using silicon carbide as a blowing agent ([0052]). Brown et al. teach using sodium hydroxide with aluminosilicate to form zeolites (col. 5 lines 48-60). It would have been obvious to

one of ordinary skill in the art at the time the invention was made to utilize the aluminosilicate from fly ash, silicon carbide as a blowing agent, and a hydroxide binding agent as taught by the reference above in Matthews et al. and Matsubara et al. process in order to utilize the availability of the fly ash resources, to generate the gas needed to expand the microsphere, as taught by Yamada et al., and to have a thermally stable binder and allow for access of the gases, as taught by Brown et al. (col. 1 lines 28-31).

17. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews et al. (3,838,998) in view of Matsubara et al. (2002/0004111), as applied to claim 13 above, in view of Netting (3,888,957). Matthews et al. disclose a process for manufacturing microspheres, but do not disclose a drying temperature of 50°C. Netting teach of two drying steps where hollow spheres are dried at a temperature of about 50°C and then further dried at a raised temperature about 400°C (col. 5 lines 30-31). Netting teach an example where the particle was dried at 100°C and then 300°C, which is interpreted to be about the claimed temperatures, according to specification disclose by the applicant on page 21, [0087]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the drying temperatures of Netting in the process of Matthews et al. and Matsubara et al. in order to remove the proper amount of moisture, as taught by Netting.

18. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews et al. (3,838,998) in view of Matsubara et al. (2002/0004111) and Veatch (2,978,340). Matthews et al. disclose a method for forming microspheres comprising:

a. Providing an agglomerate precursor comprising an aluminosilicate component, which naturally would have a preselected size (col. 4 line 37), a blowing agent, and a binding agent (col. 5 lines 60-68), with water to form a homogenous mixture (col. 7 lines 29-44); and

b. Drying the mixture to form agglomerate precursor (col. 7 lines 49-53); and

c. Firing the precursor at a temperature greater than 800°C (col. 10 line 24) and time to activate the blowing agent to release gas, thereby forming microspheres with an internal void (col. 10 lines 37-45).

Matthews et al. further disclose the firing time as very short (col. 1 lines 4-6), but does not disclose a specific amount of time. Veatch et al. teach a firing time of less than 20 seconds (col. 4 lines 40-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the firing time of Veatch et al. in the process Matthews et al. in order to adequately fuse the and expand the hollow spheres. Furthermore, Matthews et al. fail to disclose the alkali metal oxide content of the microspheres. Matsubara et al. teach of microspheres with an alkali metal oxide content of less than 10% (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the low alkali metal oxide content of Matsubara et al. in the process of Matthews et al. in order to enhance the chemical resistance of the microspheres, as taught by Matsubara et al.

Response to Arguments

Applicant's arguments filed February 27, 2007 have been fully considered but they are not persuasive.

19. Applicant's arguments with respect to claim 1, regarding the composition of the precursor of Matthews, have been fully considered but they are not persuasive. Matthews et al. disclose an approximate proportion by weight of 60-20-20, wherein 20 represents the soda oxides. However, the recited limitation of claim 1 indicates an *alkali metal oxide* content of less than about 10 wt%. The soda oxides comprises several oxides, including SiO2, Al2O3 and alkali metal oxides, of which only 11% is the alkali metal oxides (col. 6 lines 13-20). Therefore, 20% of the precursor is soda feldspar, of which only 11% is alkali metal oxide. Clearly, 11% of the 20% results in less than 10% of alkali metal oxide in the precursor. It is believe that since Matthews does disclose the recited alkali metal oxide content, Matthews does not teach away from the claimed alkali metal oxide content.

20. In response to applicant's argument that Matsubara is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the applicant argues that Matsubara teaches different aspects of microsphere production than Matthews, such as different method steps for making microspheres.

However, Matsubara was not used to teach these other differences noted by the applicant, such as the use of a slurry or particle size. Instead, Matsubara does teach a desire to have low alkali metal oxide content in the precursor and microsphere. Furthermore, Matthews also disclose that the precursors can comprise of other additives. It is also believed that Matsubara is simply an example of a similar composition of microsphere to that of Matthews, since it also has some of the fundamental components, SiO2, Al2O3, and alkali metal oxides less than 10%.

Conclusion

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Queenie Dehghan whose telephone number is

(571)272-8209. The examiner can normally be reached on Monday through Friday 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Q Dehghan